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* * SINCUS ACTIVITIES * *

—CLASSES— —MEETINGS— —EXCOM—

<i>[Programming, etc.]</i>	<i>[Main Thing!!]</i>	<i>[Executive Comm]</i>
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TUESDAY
December 18
 7:00 PM
 Vestal Library

WEDNESDAY
December 19
 7:00 PM
 Chase/First Bank

WEDNESDAY
January 2
 6:30 PM
 Vestal Library

TUESDAY
January 15
 7:00 PM
 Vestal Library

WEDNESDAY
January 16
 7:00 PM
 Chase/First Bank

WEDNESDAY
February 6
 6:30 PM
 Vestal Library

* * * * *
 * * * MERRY CHRISTMAS * * *
 * * * AND A VERY * * *
 * * * HAPPY NEW YEAR! * * *
 * * * * * * * * * * * * *

SECRETARY'S REPORT



AREA BULLETIN BOARDS

Johnson City 797-6416
T.U.B.B.S 722-0739

You may access using your modem. These are free to all users, but do not abuse this privilege! We hope all SINCUS members will be cooperative in helping keep our local Bulletin Boards on the air!

Best wishes and hopes for a better new year and Greetings and Best of Health to all this upcoming Christmas season.

The regular meeting of SINCUS was held Wednesday, Nov 21 at 7pm. at the Chase/1st City Bank on the Vestal Parkway, Vestal NY. 26 attending.

The meeting opened with pizza and coke on the society's 2nd anniversary. What a way to start the evening before Thanksgiving!

Gary Ennis started the meeting with updates on the new micro drive systems now for sale from Knighted Computers, among other sources.

Currently we list 52 Regular members in good standing and 10 corresponding members. We are swapping newsletters with 9 other user groups, some of which we have not heard from in two-three months. We send newsletters to many Sinclair related product businesses (15) for their info and to let them know of our advertising reach. During the past month we have mailed newsletters to an additional 10 user groups not previously contacted with no response to date.

Clyde Tackley gave a short demo of BYTE-BACK's modem with up/down load capability and RS232 port. He and Dave Schoenwetter talked about the local BBS situation. Recently a young hacker got into the files of local BBS's and really messed them up. All shut down until this past week. All boards Sysops are now taking legal measures against the individual concerned. Dave talked about the protocol for BBS use and if you get into a problem Hang UP-then call the SYSOP to tell them and explain. They may be mad but you won't lose your privileges. Take the time to learn from someone who has been thru the course and don't wade thru another guy's computer files like a moose on the loose, or someone may pull your

cursor. Our TS2068 has a different setup than the PC's, C64's and TRS80s, so you have to be careful! I feel that if any SINCUS member deliberately wrecked a BBS, he should be banned from further society meetings and functions, we don't need the association with such.

With the advent of micro drive systems, you need to copy all your copyrighted material to the new tape systems. Gary gave a class on how to use Wes Brzozowski's Header program. The header on every program contains the info you need to know to load any program. If you missed this let us know and we'll schedule a replay early next year.

We also had a corresponding member-John Livingston, of Port Washington, Long Island present at the meeting, he was home visiting relatives (Stan L.) for the holidays. Good to meet you John!

On Tuesday, we meet for a programming class at the Vestal Public Library-our next is Dec 18 at 7pm at the VPL-all welcome. If you missed the last or last couple come on down. Our homework is to 1. Write out in English (not BASIC) the step you would take for making the computer list numbers, like 1.456 and .6783 and 1.00006 all in a column with the decimal point in the same column, like

```
1.456
.6783
1.00006
```

2. Then on the program "PLAY" the one that you got with your 2068, write a "logo" program to make a square, a rectangle, a triangle and 4 squares and anything else. 3. write out the Header pokes, and look up and write down the mnemonics for each step.

WINTER MEETING CANCELLATIONS

If there is a county "emergency road use only" status declared in Broome county the meeting scheduled for that night will be cancelled. We cannot get a room on short notice, so the next meeting will be the next month.

TS2068 vs TI 99/4A and

TRS 80, CoCo II

by Tony Cekolin, SINCUS Corresponding member
from Mobile, Alabama

Many people have asked me which computer is the "best" computer. That has always been a tough question to answer. There are so many computers on the market, so many different software packages for each.

The normal response is to say that the computer that I first purchased - the TIMEX - is the best there is. Many of you would probably agree. We tend to like the computer we feel the most comfortable with the best. Recently, however, I have had the opportunity to work on a variety of computers ranging from the TS 1000 to an IBM 4341 mainframe. I also recently bought the TI 99/4A and the TRS-80 Color Computer II. Though I am not, I repeat not!, an expert on computer systems, I have learned enough about the TI and the TRS to compare them to the TS 2068, at least in my own mind.

Now when someone asks me which computer is best my automatic response is, "for what application". These three systems each have their strong points and their weaknesses. They are all capable of three basic functions; text handling, graphics, and number crunching. They handle these functions in basically the same way, but not with the same degree of efficiency. It is the small differences in the way they do things that makes them desirable for different applications.

First of all the text handling capabilities. All three computers can process text. That is one of the basic uses of a computer. Users are concerned with three basic parts of text handling: 1) screen width, or how many characters they can print across their screen; 2) string handling functions of their form of BASIC; and 3) word processors for their computer.

First the TI 99/4A. The TI has the smallest normal screen width with 28 characters across. Of course more are available in machine language but the normal screen is rather

narrow. Also the screen displays upper case letters in the normal fashion but lower case letters are just a miniature version of upper case. The string handling function of the TI is SEG\$ and it operates pretty much like the TIMEX string slicer. Strings are limited to 255 Characters however. I haven't used the word processor for the TI as it requires a disk drive and costs \$99.00, so I can't say how good it is.

The TRS-80 has a screen width of 32 characters. It has upper and lower case letters also, but the lower case letters are represented by inverse uppercase letters in normal operation. That can be pretty confusing. As for string handling functions, it is loaded with them. It has a maximum string size of 255 characters as well though. The string functions are LEFT\$, RIGHT\$, and two versions of MID\$, as well as INSTR\$. To describe how these functions work could take up a book. Having so many functions can make life complicated. I have used the TRS-80 word processor. It comes in either a cassette or disk version and you almost have to be a programmer to use it.

The TIMEX has true upper and lower case letters and a screen width of 32 characters. It's string size is apparently unlimited as I have one program which uses 28,000 character strings. Like the TI, the TIMEX has only one string function - the string slicer, but I find that it is powerful enough for most any programming need. It will do just about anything that all the TRS-80 functions will do if used creatively. As far as word processors go, I haven't found anything as powerful as Tasword II with it's ease of use. I've used word processors up to the mainframe level and I am constantly impressed with Tasword in comparison.

As for graphics, the TI can be discounted almost altogether. I say almost because user defined characters are very easy to use but nothing else in graphics is. Plotting can't be done outside of machine code. The TRS-80 is the King in the graphics department. It comes with a wealth of powerful, easy to use graphi commands. One of the most impressive being the ability to paint a figure with one line of code. The TIMEX, with all of the easy graphic commands available isn't nearly as powerful.

SMUGGLERS COVE CLUE:

"SEARCH" the Mound of Gravel"

WHAT'S NEW !

by Paul Hill, SINCUS

The TRS-80 has one drawback that the TIMEX doesn't have a problem with however, and that is mixing text and graphics. On the TRS-80 you must draw any text you want on a graphics screen. That can be a serious liability to the business programmer or any one who wants to label their graphics.

With it's 16-bit microprocessor, the TI is the best number cruncher around. Long calculations are whipped out with ease in very short order. If the programmer is familiar with machine code, the speed improves dramatically. I know several engineers who use their TIs for work with good results. The TIMEX and the TRS-80 are both about equal in this department. For short number runs either machine is more than adequate. Outside of a specialist few people care about a great deal of speed or accuracy to a large number of decimal places.

All in all I think that the TIMEX is the best computer for the home user who doesn't want to spend an arm and a leg for their system. Certainly word processing is a breeze with the TIMEX and it has plenty of power for other applications as well. The other two systems can be expanded with more ease than the TIMEX, but if someone is interested in a fancy system they would do better by spending more money and getting all of the extras up front. I would and do recommend the TIMEX 2068 just about every time.

Tony Cekolin
SINCUS
Mobile, AL

(ed notes:) Tony is a student at the University of South Alabama in the computer sciences course. He has written me several times of his courses and his use of the 2068 with modem to do his lab courses. Currently he is having fun with PL\1. He has also sent other pieces for publication which haven't been printed yet. I hope to see them soon.

Chestnuts roasting in a microwave
Perry singing on hi-fi
Christmas songs being played on TV
and taping them on the VCR
Everybody tries their hand
with the joystick
And then we try to solve ZORK II
Microchips are the rage in our lives
HI TECH CHRISTMAS TO YOU !!!!!
with apologies to a Christmas song!

RESEARCH SERVICE LABS, PO BOX 19124, OKLAHOMA CITY, OK 73144 Programs and add ons for all T/S computers; I/O board, CI/F, EPROM programmer, and rear edge connectors. Future-5 1/4 and 8" disc IF, RS232, IF, joystick IF (proportional) write for info

ROTRONICS-ENGLAND: for the Spectrum, a dual microwafer system-with the BSR "stringy floppy" drives and Entrepo cartridges. (about \$160 US\$)

SINCLAIR, ENGLAND: Recently announced the solid-state Winchester-a wafer scale, solid-state drive capable of 10 micro-second access to half megabyte of memory. FOR THE QL.

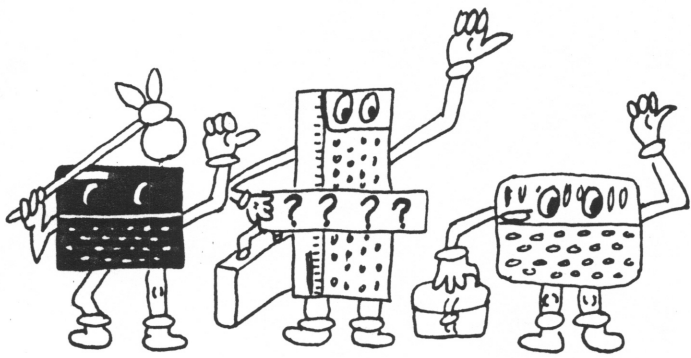
MScript-FOR THE 2068: 21st Century Electronics 6813 Polk St. Guttenburg, NJ 07093. Phone (201) 869-2616. \$69.95+3.50 s+h. "...harder to read screen, generic documentation, poor use of the 2068 keyboard. It only works with the Aerco IF. It is definitely worthy of consideration for serious WP use..screen is white on black.. hard to read...if over 64 characters a line, window moves along. Setting margins, indents, etc. are set at the beginning of a line, pages are automatic, no right justification shown on screen...does print that way ...fast keyboard scan...menu also shows memory used, free, word count, line count and file name. Can be used as a file program, mail list manager and label printer." Review by Richard Cravy, S.U.M.

POKES FOR SPECTRUM ROMs/TASWORD with AERCO-LOAD Aerco software
LOAD Tasword
BREAK into BASIC
POKE 57999,127 ,ENTER
POKE 58004,98 "
POKE 58008,127 "
RUN, ENTER, then SAVE new version
Thanks to Joe Williamson, S.U.M.

All the above info copied from the Nov issue of SUM. To subscribe write to SUM, 3224 NW 30th Avenue, Gainesville, Florida 32605 \$12/yr \$6/6mos.

You can still get the 2068, TS Recorder, a 2040 like Printer and 5 programs for \$179.95 from 47th Street Photo/Computer, NYC...check the Sunday NY TIMES every week for prices, s+h cost and the telephone # or address.

Paul Hill
SINCUS



WHERE DO WE GO FROM HERE?

BEING AN ONGOING YET CONVENIENTLY INTERMITTENT
COLUMN OF REVIEWS, RANTING, RAVING, AND FREE
ADVERTISING FOR THOSE WHO CATCH THE ATTENTION OF:

WES BRZOZOWSKI

In my September 1984 column I mentioned the name and address of SYNCWARE NEWS. I had not seen it at that time, but expected well of it because of its new editor, Tom Woods. Tom has earned a deservedly good reputation, partly due to the excellent documentation in his PRO/FILE products. One of our members has subscribed to this publication and on seeing a copy, I have to say that Mr. Woods has not let us down. The newsletter is a black and white 20 pager, more technically oriented than most, and very nicely done. Serious users should give it serious consideration.

Things don't appear to be going well at SYNTAX. First they shrunk their newsletter, then they raised their rates (loss of advertising can take a serious toll), and now they are way behind in their publication schedule. I do wish them well, but the signs don't look like a recipe for success.

Speaking of being behind in publication schedules, keep in mind that user group newsletters, which may be somewhat erratic in their publication dates. We're very spoiled by the excellent job Gary is doing with SINCUS NEWS; in fact, we can predict, within a few days, when we'll receive each issue. This can only continue if you (yes you Bunky) support him by submitting programs, reviews, articles, opinions, or anything else you can think of. This is not an exaggeration, your newsletter NEEDS your support. We now return you to the article, already in progress.....

A good example of fluctuating publication dates is the excellent newsletter of the Triangle Sinclair User's Group, mentioned in my September 1984 column. President Doug Dewey tells me that the "August just in time for Christmas" issue will go out November 23, and so those who've joined will have received it by the time they read this. The next issue is already in the works. Both will be

very large, and should appease even the most impatient. (Actually, it's hard to get too "bent out of shape" when you consider the sheer volume of information they're supplying for just ten bucks a year. If you don't know what I mean, you have to see the newsletter.)

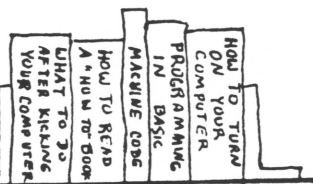
Doug explained the reasons for some of their publication problems in a long and very pleasant phone conversation. He apparently does much on the newsletter, but also receives (and may have to respond to) up to 50 or 60 letters a week. Such contacts make him an absolute gold mine of information, but, being subject to the human frailty of also eating, sleeping, and having to go to work for a living, things get behind.

Among the more interesting aspects of our conversation, Doug tells me that he's got ten British Spectrums to work on a US television set, around UHF channel 36. We didn't discuss the power supplies, but I'm sure that the British 220V version can't be used here. In hindsight, the idea of using a Spectrum on our TV sets is not at all far fetched. The horizontal sweep time on both TV standards is almost identical, so that a US television should have no problems locking on to it. (The Spectrum completes a sweep in 112 clock cycles. In order to make the TS2068 do the same with US television TIMEX only had to change the microprocessor clock frequency to 3.528 from 3.5 MHz. They're that close). The vertical sweeps of the two television standards are another problem. The British standard contains 100 additional lines per picture, and so the pictures only appear at 50 times per second, instead of 60. The television used has to be able to lock onto a much slower than standard vertical sync signal. Perhaps readjusting the vertical hold knob is enough, but we didn't discuss it. This suggests all kinds of interesting projects for the truly adventurous.

One unfortunate problem is that a Spectrum will not display colors on a US TV set. (Well, you can't have everything!) The formats of the British PAK (Phase Alternation Line) and the American NTSC (National Television Systems Committee, although some swear it means Never Twice the Same Color!!) use different schemes to encode the color information. The color burst frequencies are different but this might be correctable by a simple component change. Unfortunately, PAL varies significantly from NTSC in that it inverts the phase of one of the chrominance signals on alternating lines. Correcting this may be in the "too difficult to bother" category.

As I write this, I have in front of me the brand new catalog for Software Supermarket (address in my November column), a British firm, whose inventory includes software for the ZX Spectrum and the Commodore 64 including many titles available in either machine's format. They deal only in top quality software, including most of the currently popular Spectrum titles. Their 32 page illustrated catalog contains such top notch adventures as The Hobbit, Snowball, and Sherlock; arcade games like Jet Set Willy, and Psytron; business software like Omnicle 2 Masterfile, and Tasword Two (those of us who paid \$50 for that last one could have gotten it from England for about \$18!). There's also Machine Code Tutor (with over 70K of data), Paintbox, (a graphics utility), and extra fancy flight simulators, like Fighter Pilot, Night Gunner, and Harrier Attack. When you're tired of flying, you can simulate air traffic control, with Heathrow, and when you tire of aviation, you can go to sea in your WWII submarine, with Hunter-Killer. If you like to create your own adventures, programs like The Dungeon Builder (with 100 page manual) or The Quill (with 52 page manual) make it possible.

CLASSES!



PROGRAMMING

TAUGHT BY SINCUS PERSONNEL AT THE VESTAL LIBRARY - SEE THE FRONT COVER FOR THE DATES. IF YOU HAVEN'T ATTENDED YET, THAT'S OK, WE'LL HELP YOU CATCH UP AND YOU WILL LEARN MUCH!

Space limitations only let me scratch the surface of this marvelous catalog. Those wondering about pricing can get some idea from the following numbers, describing the titles I've mentioned: Highest price-Masterfile, (19.95#)-Lowest price Jet Set Willy (5.95#), Average price-10.93#. The current exchange is about \$1.25 per pound. British software is truly a bargain!!

It's no surprise then, that I've been asked a larger than usual number of questions about Spectrum software since the demonstration at October's SINCUS meeting. All along I've gotten questions about Spectrum Emulators and the availability of British software. I've done my best to cover these in previous columns, and will continue to update such topics, as new information comes in. New questions now tend to involve the difference in the apparent quality between Spectrum and TS2068 software, and my opinion of the future of TS2068 computing (and its software market) due to the influx of Spectrum software. I'll try my best to answer these, but first let me explain a couple of things to new readers.

The ZX-Spectrum is a British computer, produced by Sinclair Research Ltd. and is the model upon which our TS2068 has been designed. However, they're not identical, and most Spectrum software will NOT run directly on a 2068. However, most (but not all) Spectrum software will run on a TS2068 combined with one of several types of hardware add-ons. These add-ons were covered in my October 1984 column, and are referred to here generically as Spectrum Emulators.

Back to the questions at hand, there's no difference in quality between present 2068 software and the early Spectrum software. In many cases, they're just about identical, with the Spectrum programs modified to handle the differences in memory layout and, where necessary, TIMEX's addition of joystick ports. There's a good reason that only early Spectrum software was modified to run with the TS2068. First, we mustn't forget that we have had the TS2068 for over a year, it was released in the fall of 1983. When we consider that TIMEX did a considerable "redesign job" on the Spectrum, it's not unreasonable to expect that they started a year before that. This brings us back to the fall of 1982, when the Spectrum was barely 6 months old in England. This is the time when TIMEX would have been negotiating for the rights to market redesigned Spectrum software in the US (Don't forget modification takes time too!).

At that time, Spectrum programs were

written at the software houses busily producing ZX-88 (TS 1000 to us) software. Programmers, using skills learned on the ZX-81, didn't yet know how to fully use the capabilities of the new machine (they're STILL learning), and probably weren't allowed to take the time. The Spectrum had produced a new market, and the rush was on to get into it. In any case, users familiar with the ZX-81 were understandably impressed by any use of sound or hi-res graphics; there was no need to get too fancy.

To be sure, there were exceptions. Flight Simulator and VU-3D made reasonable use of the machine's graphics abilities, while Penetrator showed that sound could be used effectively. On the other hand, programs like VU-File were copied almost directly from their ZX-81 counterparts, with small additions like the use of color.

But a lot can happen in two years. As an interesting parallel, that's about the time between the release dates of the ZX-81 and the Spectrum. With hardware advancing so far so quickly, it's easy to imagine the software also making such gains. This may seem excessive at first, but consider that the Spectrum is by far the best selling computer in England! This makes the software market highly competitive. It is so much so, that it's "gotten out of hand", with 4000 titles reportedly available. In order to get the customer's attention, programmers are under great pressure to squeeze every last bit (no pun intended) of performance out of the machine, and they do!!

An added advantage to the competition is that much of these high quality products sell for around ten dollars, in our money, with prices dropping, as the programs get older and harder to sell. The "also rans" may go for around 3-4 dollars. At this writing, I have several of the "older" adventure games on order. Written in machine code, each is about 14K long, and was originally sold for the ZX-81 in the US as Adventures A, B, and C. Original prices were about \$20 each, then later \$15 each. The Spectrum versions will cost me about \$2.50 each!!

What of the future of TS2068 computing in this light? I expect that a very large number (probably a majority) of users will not bother with any form of Spectrum Emulator. Either they're quite satisfied with what they have, (it's quite a satisfactory machine, I think), or they're determined not to spend any more on it, or they just haven't heard of Spectrum emulators.

The "quality gap" between Spectrum and TS 2068 software will widen with time. The Spectrum stuff keeps getting fancier and fancier. Development of TS2068 software is now a "cottage industry", with a dwindling market, as communications between users continues to break down. This market doesn't allow lots of quality software, although there are those exceptions, like HOT-Z 2068. Still its current price of \$40 exemplifies the problems of existing in a limited market. (But it IS worth \$40!!)

The number of emulator users is steadily growing, as are the ranks of US and Canadian vendors who stock Spectrum software. Since they're still dealing in small quantities, they'll get little, if any discounts. This is probably why they sell the programs for 2-3 times the cost of ordering directly from England.

In the end, we'll see a large-enough-to-be-obvious core of "Spectrum Users". Assuming that SINCUS retains its present healthy membership roll, "emulator people" will eventually comprise another special interest group, somewhat analogous to the telecommunications folks in our club.

A note to the weak of will; the initial "cost of getting in" is far lower for Spectrum emulation than it is for telecommunications. Nevertheless, none but those with the strongest will power will keep from making up the difference many times over when they see what British software is available. I've stopped counting the number of my dollars floating around overseas, but I've no complaints.

Once again, those with questions or information can write to me at:

Wes Brzozowski
337 Janice Street
Endicott, New York 13760

I've been requesting that those wanting a reply also include a stamped self addressed envelope, but useful information will be gladly accepted instead.

WES BRZOZOWSKI
SINCUS

SMUGGLER'S COVE TIP

"FLOAT the Life Belt"



2K-EXPRESS

by Gary Ennis, SINCUS NEWS Editor

RETURN - to last month's SINCUS NEWS and look at Wes' article and read the column on the RIGHT, then the column on the LEFT! I apologize-somehow they got cut OK, but got pasted in reverse!

NEW - author - Tony Cekolin, one of our corresponding members, from way down there in Alabama!!! Tony has a second article that is already pasted up for the January issue of SINCUS NEWS, and I "resolve" to get your program listings in next month too!

NEW - advertiser - "Gini" Lake is advertising her Genealogy program, so I hope some of you order it!! COMPUSERVE friends!!

PRINTed - in Electronic News, October 1, 1984-"Sinclair Research Ltd. reported a 5.3% drop in fiscal 1984 profits to \$9.64 million, or \$2.41 a share, compared with the \$10.18 million, or \$2.55 a share netted for the 1983 fiscal year.

Results for the past 12 months ended March 31 reflect delays in the introductions of Sinclair's QL personal computer and flat screen television and the loss of substantial revenues from its former licensing agreement with TIMEX Corp."

"U.S. sales plummeted to \$127,920 (ED. note-that is correct) in 1984 from \$11.49 million in 1983....Sinclair has said that is has no plans to market its Spectrum home computer in the U.S. following TIMEX withdrawal from the market... and the company revealed plans to double production of the Spectrum to more than 20,000 units per month."

OPEN - the bidding on pictures of Wes Brzozowski has "Sherlock Holmes" and Gary Cole as "Little Green Giant"!!

DRAW - with the new Zebra Graphics Tablet for the TS2068!! It uses the Koala Technologies "Graphics Tablet" and "ZebraPainter" software. List price for tablet, software, and I/F \$119.95.

EDIT - having resolved to have SINCUS NEWS mailed the Friday before the monthly meeting (see page 1), I hereby request your help in achieving these goals in the months ahead. Let's make them our SINCUS RESOLUTIONS-

1. Reread the manual for the computer you currently use!!
2. Write down everything Wes Brzozowski says even if you do not really know what he means-in two months you will!
3. Look through your software and start to use something that you have not before used to make your life easier!
4. If you cannot find any software that will make your life easier - then write down (in plain English) something you feel the computer should be able to do for you, but does not do at the present.
5. Attend the monthly meetings and ask questions.
6. If you have a piece of software that you really like-it needs to be written up in a "REVIEW"-keep it simple and just write what you like/or don't like about it.

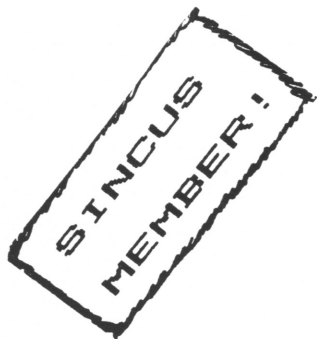
LISTING the positive things that SINCUS has brought to me will take more room than I have left (thanks Sis for the ad-but it do make me be short! Of course, at least this month I got to write a column!!). The friendships and learning experiences have been and will, I am sure, continue to be an important part of my life so I thank each and every one of you for your support and your stimulation-if I have a wish for 1985 it is simply "May I grow as a person and have the time to converse with each of you about what you are doing in the world of Sinclair". Happy holiday!!

*Happy Holiday
to each of you & yours -
Gary*

* * * NAMES * * *

A GENEALOGICAL FILE PROGRAM FOR THE TIMEX 2068

\$30 postpaid, check or money-order



ALGOBIT Software, Inc.

P.O. Box 351

Hockessin, DE 19707

Software ahead of its Timex!

SPECULATIONS ON THINGS THAT MIGHT HAVE BEEN

BY WES BRZOZOWSKI, SINCUS

When we look at our computers our minds are usually only on the finished product. Sometimes it's interesting to look more closely, and to also check some of the TIMEX and Sinclair News Releases, made before actually selling a particular item. Doing so we see that our computers might have looked and acted quite differently from the way they do today.

This shouldn't be too surprising. When a group of people set out to design a new product, their initial impressions are often very different from the final result. This is because the design process is itself a learning experience. Although different people in the design group may want to add different features, some unforeseen gadgetry almost always has to be added to make it work together. There are times when some options absolutely won't cooperate, in which case something has to go. In the middle of the design, it may turn out that some unplanned feature would be convenient, causing further changes. And of course, five minutes after the first hand built unit is working, in the middle of the celebration, someone from marketing will call to tell them that it has to be redesigned to include some new function, or it won't sell. Then once that's done, the redesigned unit won't fit into the case....

It goes on and on (and you wondered why it sometimes takes so long for an announced product to reach the marketplace.)

It doesn't even end once finished units start rolling off the production line. Once in the hands of actual customers, numerous never-before-seen bugs will come screaming out of the machine matched only by the screaming of the users. Design changes for later issues of the product may both correct the bugs and make it cheaper to manufacture. The Sinclair Interface One, which among other things controls the Spectrum microdrives, is already in its second issue! The ZX-81, TS1000, the RAM pack, and the British ZX-Spectrum all have at least three issues! And if you're following the story of Sinclair's QL computer, you'd know that you NEED a (working) QL just to keep track of the changes flying about. The TS2068 wasn't around long enough to really get beaten around, but the long list of software bugs detailed in the TS2068 Technical Manual

suggests that a lot of the system code would have gotten fixed up in later versions. The printed circuit board would likely have been redesigned as well. There's a "kluge board" plugged into an IC socket, with extra wires strung around inside; you see the board quite clearly if you look into the expansion slot. The life of the TS2068 may have been short, but not so short to escape last minute engineering changes!

There are some interesting stories surrounding the ROMs for Sinclair's ZX-81. Many SINCUS "old timers" probably remember the early ZX-81's that couldn't count. (If you have an old ZX-81, take the square root of .25; you should get .5, but you may instead get something over 3, in which case you have an old ROM.) Very few people are aware of an earlier version, never released for sale, that contained PRINT TO, DRAW, UNDRAW, READ, DATA, and RESTORE commands in its BASIC. ROMs with this code were made up, including one sent for review to SYNTAX (see SYNTAX, Dec. 1980).

It might seem strange that these commands were removed from the production version; early users complained bitterly that READ, DATA, and RESTORE were missing. If we look in the same issue of SYNTAX, at the list of commands available in the ROM, we find that five other commands are conspicuously missing FAST SLOW, LLIST, LPRINT, and COPY. The early ZX-81 designs didn't have a SLOW mode or support a printer! Perhaps some market forecast predicted better sales if a printer were also available. Then again, someone may have just figured that after they sold a lot of computers, there'd be an automatic market for a lot of printers. The added appeal of the SLOW mode is obvious to those who have used it. In any case, the present ZX-81/TS 1000 ROM is absolutely full; I know of only one (!!!) unused byte in its entire 8K! In order to get the new commands in, something that wasn't absolutely necessary had to be deleted. Those who never bought printers might resent the loss of some very useful commands, but that's the decision that was made.

Speaking of ROMs, an interesting mystery surrounds the ROM socket in the ZX-81. Although the ZX-81 ROM is a 24 pin device, it was plugged into a 28 pin socket, meaning that something larger than the standard ROM can be inserted. For a long time there were all kinds of rumors. The most popular said that

Sinclair would soon introduce a mini-disk drive and a 16K ROM to support it, which would just plug into the "oversized" 8K ROM socket. The answer was in the printed circuit board, but I don't know anyone else who checked it out. The additional signal needed to control a 16K ROM is not connected to the socket; you can't just plug in a 16K ROM. Also, the 8K ROM pinout is a bit different from the standard 16K pinout; other rewiring would be needed. There are certain EPROMs that can plug into the socket, but only part of their memory would be useable with it wired as it is. This suggests that an EPROM with a "test program" might have been plugged in at the factory, to check out the circuitry.

But it wouldn't be any fun to leave the story there. It's interesting to note that Sinclair's original Issue 1 printed circuit board has a few circuit traces that just stop without being connected to anything!!! They stop right next to the ROM!! Tracing around these lines, I've found that it's possible to cut a few printed circuit lines, add a few (very, very short) wires, and reconfigure the board for a 16K ROM or EPROM, or an 8K EPROM. (The exact cuts and additions depend on what you want to plug in.) The operation is some what more complicated than many ZX-81 owners would feel comfortable doing, but it's possible that Sinclair had planned to modify the machines, for a fee.

It seems highly likely that someone at Sinclair wanted to keep the option to someday manufacture a 16K ROM version of the ZX-81. The printed circuitry couldn't be laid out in a more convenient way. Just the tiniest bit of extra printed circuitry would make the necessary connections, and no existing lines would have had to be moved. Making the necessary line deletions is a piece of cake. But whatever their plans it wasn't to be.

In case anyone's interested, the TS1000 uses the Issue 3 printed circuit board, which is laid out very differently. It still uses a 28 pin scheme in the ROM area, so it may all be possible to do "quick changes" on it. (I've not checked it myself; in between the time I checked out the Issue 1 circuit board and the time my vision returned to normal, I vowed to never, never, never do that again.) Note that this is all since I'm told TIMEX soldered the ICs directly to the printed circuit board after that. It would be pretty much impossible to change memory chips under those circumstances.

The ROM rumor also mentioned a Sinclair mini-disk drive. This could have had some basis in fact, since Sinclair did develop a small disk drive before coming out with their continuous-tape-loop microdrives. Every other disk in the universe contains numerous concentric tracks, requiring expensive and fairly precise head positioning gadgetry in the disk drive. It also allows the head to be positioned quickly on the proper track. The Sinclair disk contained a single track, that spiralled in the center like the groove in a phonograph record. This probably allowed the head positioning mechanism to consist mostly of an injection molded plastic template, impressed with the shape of the spiral track. This would lengthen the time required to "find" the correct data on the disk, but it would also cut the cost of the drive. However, the continuous tape loop in the present microdrives should not be any slower than the Sinclair disk scheme, and doesn't require the head to be moved at all. Probably for this reason, the disk was announced as a technology development, was given some small mention in the electronics trade publications and it silently vanished. This seems all for the best, despite the many problems that present microdrive users are having. Nevertheless, had it been developed soon enough, even American users might today be plugging strange little disks into strange black plastic disk drives.

Here's an interesting thought. If you wanted to build a TS1000 add-on that plugged into the expansion slot, but was very tall and wide, you'd have to find a good way to secure it to the computer, or you'd crash anytime you touched it. If you'll look under your TS1000, you'll find a strange rectangular indentation in the center rear. On each side is a hole, reinforced with plastic. That indentation will readily accept a mounting bracket from a large, bulky add-on, and it can be attached with two self-tapping screws in the holes. I've used this for one of my larger projects, and it works beautifully. It can also be found on ZX-81s and so is a Sinclair design. I'm grateful to the folks at Sinclair for including it, but what was in their minds when they put it there?

The "things that might have been" in the TS2068 are a whole different story (and the subject of another article). TIMEX announced some of its plans; we've learned a lot by working with what they left in the machine, and details on some comparable Sinclair products are readily available. Since Gary isn't fond of extra long articles, we'll leave all that for the next time.